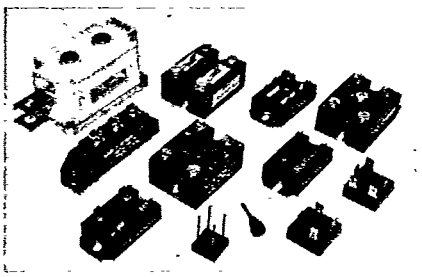
Encapsulated Assemblies



Various combinations of diodes and SCR's are available in encapsulated modules that offer the following benefits:

- Convenient, compact size for putting big capability into tight working areas.
- Isolation from other circuit elements—many diodes and SCR's are constructed so that at least one terminal is in contact with the chasis, a heat sink, or some other part. With encapsulated assemblies, on the other hand, the terminals are isolated by the nonconductive encapsulation material which is in contact with the heat sink or other mounting point.
- Heat dissipation via the relatively large, flat mounting surface and the high thermal conductivity of the encapsulated package.
- Fast, economical assembly because the components are mounted and circuited in a single package that can be quickly mounted and connected.

Encapsulated assemblies are known by a variety of names including power cubes and power modules.

Note: It is good practice to use surge suppressors with encapsulated circuits (see the section on surge suppressors for more information).

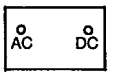
Depending on the load they carry, encapsulated assemblies usually must be mounted on heat sinks to provide sufficient heat dissipation. And in heavy-load cases, fan cooling also may be necessary. Some assembly specifications provide an indication of the heat dissipation required. However, heat sinking or other dissipation requirements vary widely depending on the conditions at each installation. If you need help in this area, call CEHCO. We will be glad to assist.

Half-Wave Rectifiers

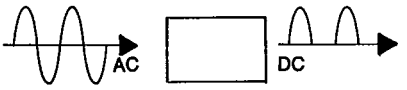
Encapsulated half-wave rectifiers consist of a single rectifier diode in a convenient package that mounts easily and provides isolation and the other benefits of encapsulation. Half-wave rectifiers output pulsating direct current in direct proportion to the input voltage.

SYMBOL

PACKAGE



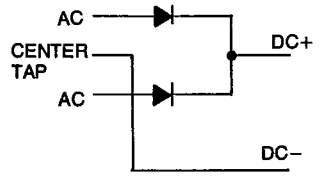
PERFORMANCE



Center-Tap Rectifiers

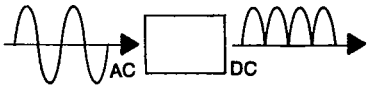
Encapsulated center-tap rectifiers contain two diodes conveniently packaged for installation with center-tap-transformer power supplies. Center-tap rectifiers output pulsating direct current in direct porportion to the input voltage.

SYMBOL



PACKAGE

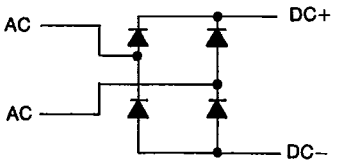
PERFORMANCE



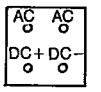
Full-Wave Bridge Rectifiers (1- and 3-phase)

Encapsulated full-wave bridge rectifiers contain four rectifier diodes. Individual assemblies can accept either single-phase or three-phase alternating current input. Single-phase bridges output 85 percent of the input voltage, while three-phase bridges output 126 percent of the input voltage.

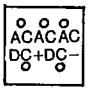
TYPICAL SYMBOL



PACKAGE

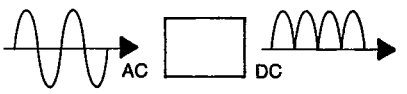


SINGLE PHASE



THREE PHASE

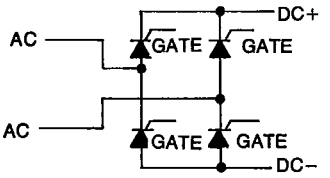
PERFORMANCE



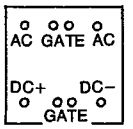
Full-Wave SCR Bridge Rectifiers (1- and 3-phase)

Encapsulated full-wave SCR bridge rectifiers contain four silicon controlled rectifiers. These units operate similarly to full-wave bridge rectifiers, however, varying the instant that the gate voltage is turned on provides an additional level of control—the output direct current voltage can be adjusted from zero up to near the value of the input voltage.

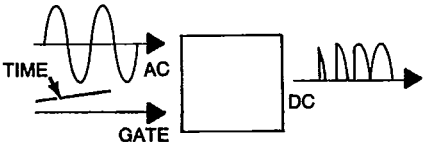
TYPICAL SYMBOL



PACKAGE



PERFORMANCE



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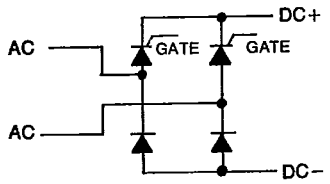
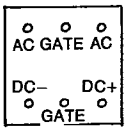
Full-Wave Hybrid Bridge Rectifiers (1- and 3-phase)

Encapsulated full-wave hybrid bridge rectifiers contain two diode rectifiers and two silicon controlled rectifiers. They operate like full-wave SCR bridge rectifiers but are enough less expensive so that the price difference becomes significant where they are used in quantity.

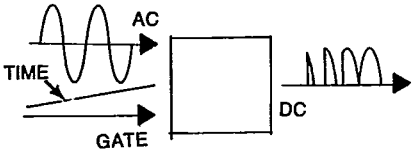
TYPICAL SYMBOL



PACKAGE



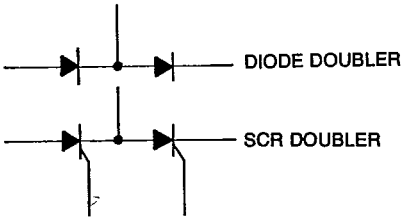
PERFORMANCE



COMMON CATHODE SHOWN

Diode and SCR Doublers

Doublers (not to be confused with voltage doubler circuits) are pairs of encapsulated diodes or silicon controlled rectifiers that are used as building blocks to produce bridge or other types of rectification circuits. In addition to convenience, isolation, and the other advantages of encapsulated assemblies, they offer extreme flexibility in circuit design and manufacture.

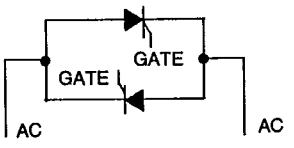


Inverse Pairs SCR's

Note: Inverse pairs SCR's are also called back-to-back SCR's and AC switches.

Encapsulated inverse pairs of silicon controlled rectifiers, as the name implies, contain two SCR's which are configured so they will conduct in either direction when gate voltage is applied. This provides a means of controlling alternating current voltage in a circuit or the unit can be used as a switch. Inverse pairs are also used for phase control, as bridges, and as doublers. In all cases, all the benefits of encapsulation are available, plus there are no moving parts in switching and control applications.

TYPICAL SYMBOL



PACKAGE

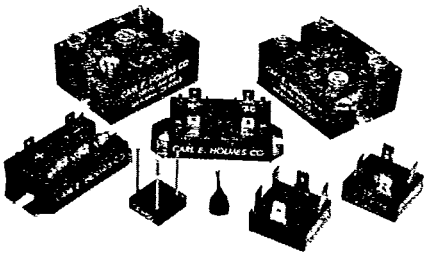
ENCAPSULATED ASSEMBLY ORDERING INSTRUCTIONS

To order encapsulated assemblies, you need to know the following:

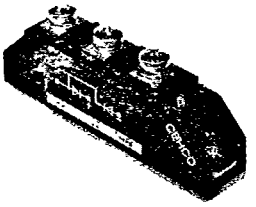
1. The type of circuit you require
2. The alternating current voltage
3. The number of phases
4. The load in amps
5. Or call CEHCO and we will assist you

ENCAPSULATED ASSEMBLY ADVANTAGES

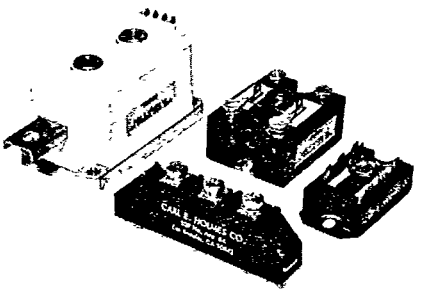
Compact size



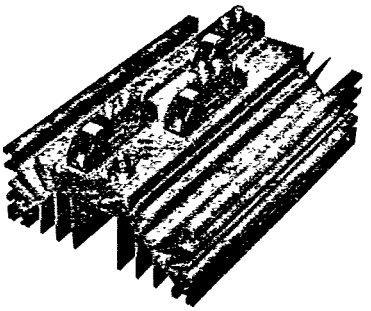
Large mounting surface for heat dissipation



Isolation from other elements

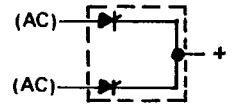


Fast, economical assembly

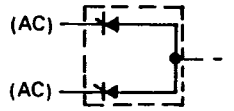


TYPICAL ENCAPSULATED ASSEMBLY CIRCUITS

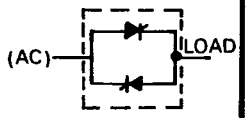
CENTER TAP (COMM. +)



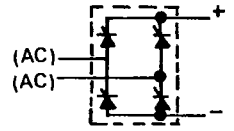
CENTER TAP (COMM. –)



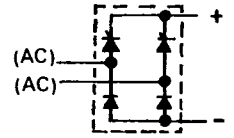
SINGLE PHASE AC CONTROLLER



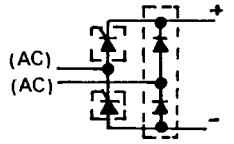
SINGLE PHASE CONTROLLED BRIDGE



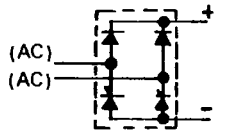
SINGLE PHASE HYBRID BRIDGE (COMM. CATHODE CONNECTION)



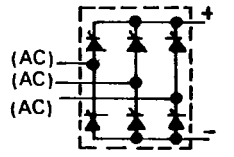
SINGLE PHASE HYBRID BRIDGE DOUBLER CONNECTION



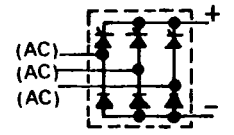
SINGLE PHASE CONTROLLED BRIDGE (COMM. ANODE CONNECTION)



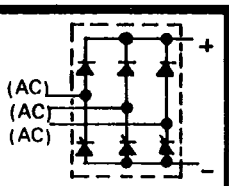
THREE PHASE CONTROLLED BRIDGE



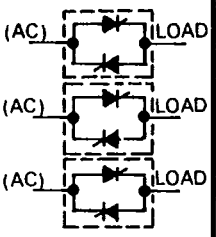
THREE PHASE HYBRID BRIDGE (COMM. CATHODE)



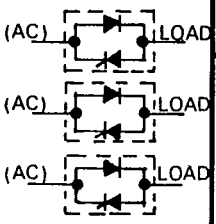
THREE PHASE HYBRID BRIDGE (COMM. ANODE)



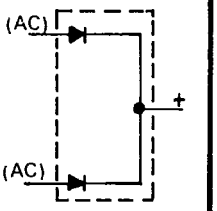
THREE PHASE AC CONTROLLER



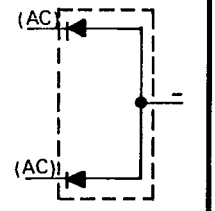
THREE PHASE HYBRID AC CONTROLLER



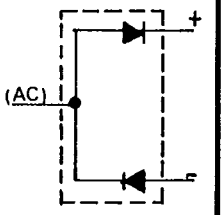
CENTER TAP (COMM. CATHODE)



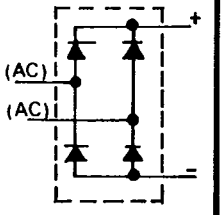
CENTER TAP (COMM. ANODE)



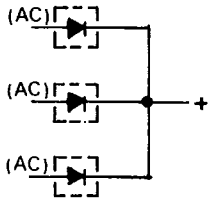
DOUBLER



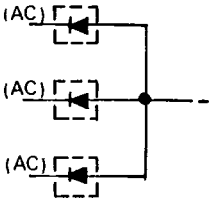
SINGLE PHASE BRIDGE



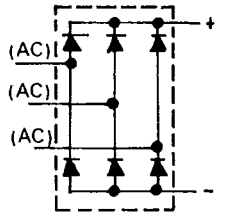
THREE PHASE WYE (COMM. CATHODE)



THREE PHASE WYE (COMM. ANODE)



THREE PHASE BRIDGE



NOTE: Each box around one or more devices indicates an encapsulated assembly.

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Series F Encapsulated Silicon Bridge Rectifier Assemblies 1 to 100 Amps, One and Three Phase

Single Phase Bridge

Part Number	Amps	DC Output Volts
1F6B1	1	600
1F10B1	1	1000
6F6B1	6	600
6F10B1	6	1000
25F6B1	25	600
25F12B1	25	1200
50F6B1	50	600
50F12B1	50	1200
100F6B1	100	600
100F12B1	100	1200

Three Phase Bridge

Part Number	Amps	DC Output Volts
25F6Z1	25	600
25F12Z1	25	1200
50F6Z1	50	600
50F12Z1	50	1200
100F6Z1	100	600
100F12Z1	100	1200

For All Series F Devices Rating Versus Base Temperature

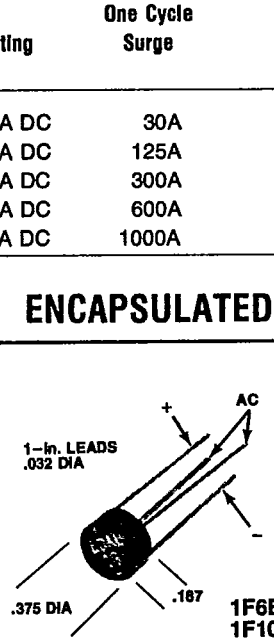
0 to 70°C - 100% of rating
80°C - 60% of rating
90°C - 40% of rating
100°C - 20% of rating

SPECIFICATIONS

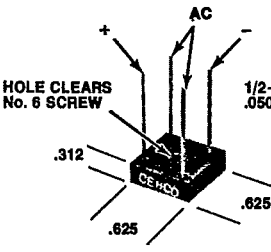
Rating	One Cycle Surge	Fusing I^2T	Isolation	Max Junc. Temp.	Thermal Res. JC to Case
1A DC	30A	3.6	2500V	125°C	—
6A DC	125A	63	2500V	125°C	—
25A DC	300A	370	2500V	125°C	0.6 °C/W
50A DC	600A	1500	2500V	125°C	0.35°C/W
100A DC	1000A	4150	2500V	125°C	0.28°C/W

Note: Dimensions in inches.

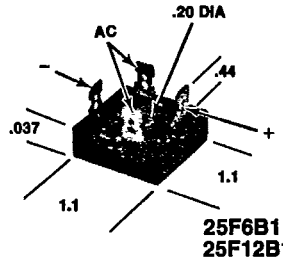
ENCAPSULATED ASSEMBLY DIMENSION DIAGRAMS



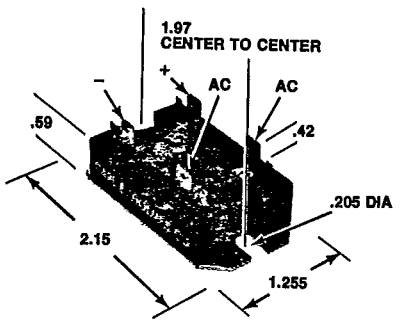
1F6B1
1F10B1



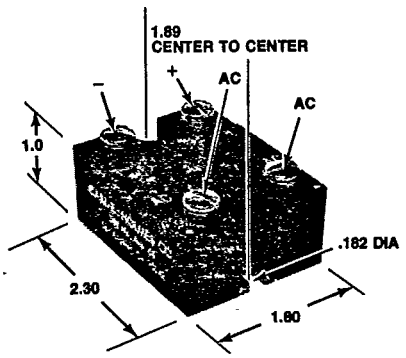
6F6B1
6F10B1



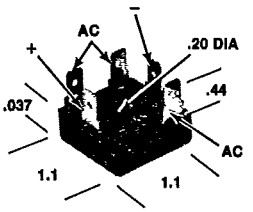
25F6B1
25F12B1



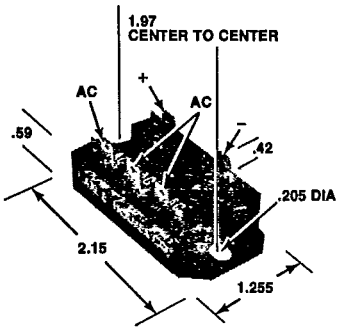
50F6B1
50F12B1



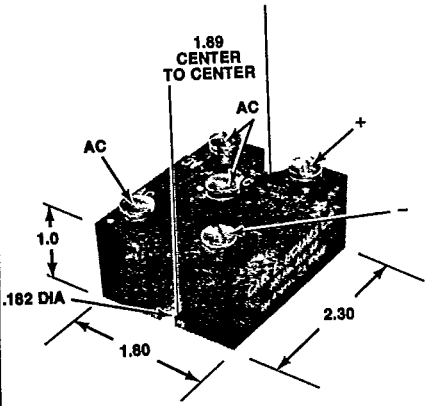
100F6B1
100F12B1



25F6Z1
25F12Z1



50F6Z1
50F12Z1



100F6Z1
100F12Z1

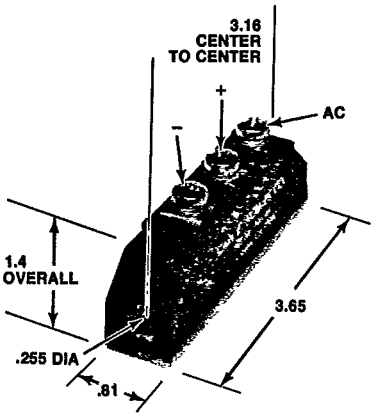
Single-Phase Hybrid Bridge
@ 85°C Base Temp.

Part No.	Volts pk.	I_{AV}	
25M6HB1	600	25	Common Cathode
25M6HB1A	600	25	Common Anode
50M6HB1	600	50	Common Cathode
50M6HB1A	600	50	Common Anode

Single-Phase Doubler

Part No.	Amperes I_{AV}
91M12DR1	90

Note: This is a rectifier doubler



81M12DR1

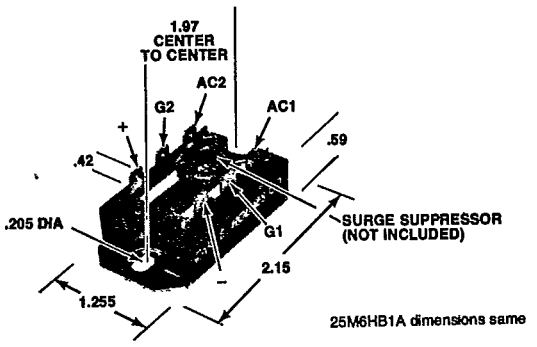
Series M Single-Phase Switches

Part No.	Volts pk.	I_{AV}	RATING INV. PAIR I_{RMS}	$D_V D_t$
26M12DS1	1200	25	55	500
56M12DS1	1200	50	110	500
91M12DS1	1200	90	180	500
161M12DS1	1200	160	325	500
132M12DS1	1200	130	286	500
250M12DS1	1200	250	550	500

Note: These are SCR doublers

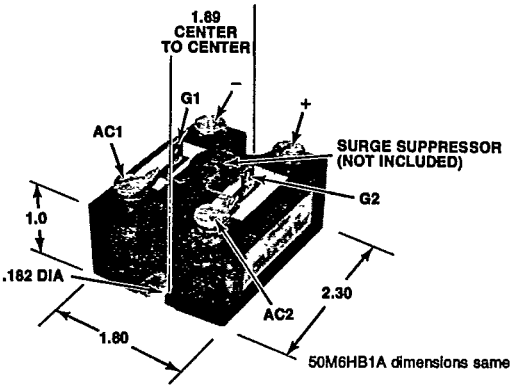
ENCAPSULATED ASSEMBLY DIMENSION DIAGRAMS

Note: Dimensions in inches.



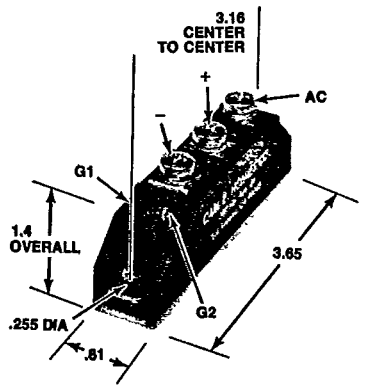
25M6HB1A dimensions same

25M6HB1

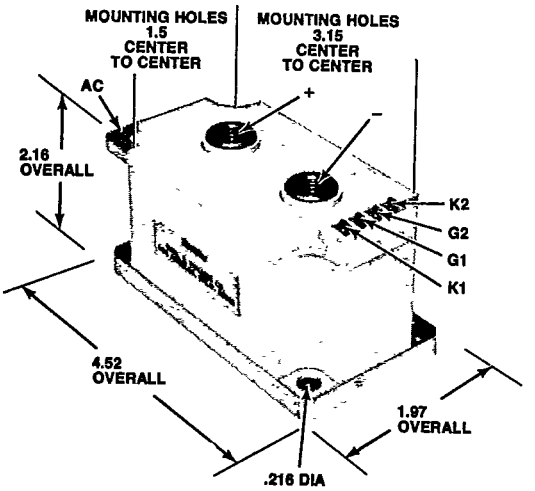


50M6HB1A dimensions same

50M6HB1



26M12DS1
56M12DS1
91M12DS1



161M12DS1